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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/881,922	06/14/2001	Louis Bennie Capps JR.	AUS920010332US1	8368

35525 7590 08/13/2004

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EXAMINER	
VU, TRISHA U	
ART UNIT	**PAPER NUMBER**
2112	

DATE MAILED: 08/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/881,922	CAPPS ET AL.	
	Examiner	Art Unit	
	Trisha U. Vu	2112	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 June 2001*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 June 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

1. Claims 1-22 are presented for examination.

Claim Objections

2. Claim 11 is objected to because of the following informalities: "**weather** the process management queue **have**" (line 4) should be changed to "**whether** the process management queue **has**". Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-4, 8-10, 15, and 18-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Brown et al. (6,075,772) (herein after Brown).

As to claim 1, Brown teaches a method for enhancing performance of a bus in a data processing system, comprising: monitoring data flow through an adapter coupled to the bus in a data processing system (counting data flow through the adapter) (col. 6, lines 5-10); determining if increased bus performance is desirable (checking to see if the request is for a guarantee bandwidth connection) (col. 9, lines 11-18); and handing of control to a code module (DLC 20) which enhances the performance of the bus if

increased bus performance is desirable (giving the adapter information and control to DLC 20) (col. 7, lines 7-37 and Figs 3-4).

As to claim 2, Brown further teaches determining the performance by examining prior throughput of data of the adapter (previous time interval) (at least col. 3, lines 27-31 or col. 7, lines 46-64).

As to claim 3, Brown further teaches changing in small incremental steps, hardware settings upstream to the adapter; and after an optimum performance point is achieved, maintaining current state (DLC 20 may compensate for the incorrect utilization of the connection by modifying the value of N_i for the next interval) (col. 8, lines 3-6, 48-67, and col. 9, lines 1-3).

As to claim 4, Brown further teaches determining whether the performance is a function of an external device (counter 22) connected to the adapter (col. 8, lines 48-67 wherein if the count exceeded, then on the next interval, the start count will be adjusted to compensate for the previous interval).

As to claim 8, Brown further teaches simultaneously monitoring throughput of the adapter (Fig. 3).

As to claim 9, Brown teaches a system for optimizing the performance of a bus, comprising: a first bus (note Fig. 1 for the bus connection between adapter 30 and data processing system 10) coupled to at least one CPU (data processing system 10) having a code module embedded therein (DLC 20); at least one input/output (I/O) adapter (adapter 30) coupled to the first bus (Fig. 1); a driver (col. 5, lines 43-50) for the at least one I/O adapter residing in the at least one CPU; and a bus monitor coupled to a hardware bus

control unit residing in the code module wherein information acquired by the bus monitor is processed (counting data flow through the adapter) (col. 6, lines 5-10), and a decision is made to increase adapter throughput (col. 3, lines 39-49).

As to claim 10, Brown further teaches a second bus (bus(es) connecting DLC 20 to Applications 12, 14,or 16) disposed to be monitored by the bus monitor, and connected to the at least one I/O adapter (Fig. 1 and col. 6, lines 5-10).

As to claim 15, Brown teaches a code module for heuristic bus optimization, comprising: a performance optimizer unit (Fig. 3, blocks 70-74); a hardware bus control unit (Fig. 3, blocks 82, 76, 78, 88) coupled to the performance optimizer unit; and process management unit (at least means to communicate/notify the users - device drivers) managing at least one device driver (Fig. 3, col. 4, lines 26-30, and col. 5, lines 43-50).

As to claim 18, Brown further teaches the performance optimizer unit determines whether bus performance is maximized for the most critical I/O process (guaranteed bandwidth connection request) (Fig. 3 and col. 3, lines 18-36).

As to claim 19, Brown further teaches the performance optimizer unit passes at least one parameter to the hardware bus control unit and at least one device driver (establish interval T and maximum counts Ni and notify user of restart) (blocks 72, 74 of Fig. 3).

As to claim 20, Brown further teaches the hardware bus control unit reads bus performance (block 82) (Fig. 3)

As to claims 21, Brown further teaches the at least one device driver changes at least one bus parameter (maximum threshold value) in an I/O adapter (adapter 30) (col. 6, lines 5-21).

Claim Rejections - 35 USC § 103

4. Claim 5, 11-13, and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown et al. (6,075,772) and further in view of Jeddeloh (6,363,445).

As to claim 5, the argument above for claim 1 applies. However, Brown does not explicitly disclose reaching a decision based upon prior performance parameters of other devices coupled to the bus. Jeddeloh discloses reaching a decision based upon prior performance parameters of other devices coupled to the bus (based on the history of bus accesses granted to other devices) (abstract and col. 7, lines 55-61). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include reaching a decision based upon prior performance parameters of other devices coupled to the bus as taught by Jeddeloh in the system of Brown to allow the faster devices to have more frequent access to the bus (col. 3, lines 41-45).

As to claim 11, the argument above for claim 9 applies. Brown further teaches a performance optimizer unit (Fig. 3, blocks 70-74), wherein a process management queue (Restart Connection Queue 24) is scanned; a process management unit (at least means to communicate/notify the users - device drivers) coupled to the performance optimizer unit (Fig. 3, col. 4, lines 26-30, and col. 5, lines 43-50); and a hardware bus control unit (Fig. 3, blocks 82, 76, 78, 88), wherein bus performance is being read, coupled to the

performance optimizer unit. However, Brown does not explicitly disclose a determination as to whether the process management queue has a high priority I/O process. Jeddeloh teaches determining a high priority I/O process (col. 7, lines 40-61). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include determining a high priority I/O process as taught by Jeddeloh in the system of Brown to allow the faster devices to have more frequent access to the bus (col. 3, lines 41-45).

As to claim 12, Brown further teaches device driver (col. 5, lines 43-50), wherein at least one bus parameter (threshold value) in the I/O adapter is changed, coupled to the process management unit (col. 6, lines 5-21).

As to claim 13, Brown further teaches the hardware bus control unit changes at least one bus parameter (block 88 – reset guaranteed bandwidth connection count) (Fig. 3).

As to claims 16-17, the argument above for claim 15 applies. Brown further teaches the performance optimizer unit scans a process management queue (Restart Queue 24) (col. 7, lines 37-45). However, Brown does not explicitly disclose determining whether the process management queue includes a high priority I/O process and querying the hardware bus control unit for bus performance of I/O devices. Jeddeloh teaches determining a high priority I/O process and querying for bus performance of I/O devices (history of bus accesses of devices) (col. 7, lines 40-61). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include determining a high priority I/O process and querying for bus performance of I/O devices

as taught by Jeddeloh in the system of Brown to allow the faster devices to have more frequent access to the bus (col. 3, lines 41-45).

5. Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown et al. (6,075,772) and further in view of Harper et al. (5,481,755) (herein after Harper).

As to claim 6, the argument above for claim 1 applies. However, Brown does not explicitly disclose a set of adapters coupled to the bus and determining a priority of the set of adapters. Harper teaches determining a priority of a set of adapters coupled to a system bus (col. 4, lines 24-41). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a set of adapter coupled to the bus as taught by Harper in the system of Brown to expand the system connection, and also it would have been obvious to include determining a priority of the set of adapters as taught by Harper in the system of Brown to allow fairness selection among the adapters.

As to claim 7, Harper further teaches changing the priority throughput of at least one of the set of adapters (col. 4, lines 42-52).

6. Claims 14 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown et al. (6,075,772) and further in view of Burns et al. (6,134,624).

As to claim 14, Brown does not explicitly disclose the hardware bus control unit is coupled to an I/O bus hub. Burns teaches I/O bus hub (at least Fig. 5). It would have been obvious to one of ordinary skill in the art at the time the invention was made to

include I/O bus hub as taught by Burns in the system of Brown to expand the system connection since the hub allowed more adapters to be connected to it.

As to claim 22, Brown further discloses the bus control unit changes at least one bus parameter (maximum threshold value) in an I/O adapter (adapter 30) (col. 6, lines 5-21). However, Brown does not explicitly disclose an I/O bus hub. Burns teaches I/O bus hub (at least Fig. 5). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include I/O bus hub as taught by Burns in place of the I/O adapter in the system of Brown to expand the system connection since the hub allowed more adapters to be connected to it.

Response to Arguments

7. Applicant's arguments filed 04-27-04 have been fully considered but they are not persuasive:

With respect to Applicant's argument on page 7 of the Remarks that "Nowhere, in any section of Brown, is an adapter coupled to a bus through which data flow is monitored", it is noted that the Examiner addressed very clearly in the Interview that there must be a bus coupling the adapter (30) to the Data Processing System (note at least col. 2, lines 59-65 and col. 6, lines 48-60 wherein data transmitted for the adapter associated with the ***connection*** between the adapter and associated Application 12, 14, or 16 is monitored).

With respect to Applicant's argument on page 8 of the Remarks that "the adapter is not monitoring data flow of the bus nor is it determining if increased bus performance

is desirable", see the argument above, and also note at least col. 7, lines 3-37 "the adapter is then used to determine a timer value T which establishes a predefined time interval and a maximum data count for each guaranteed bandwidth connection").

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trisha U. Vu whose telephone number is 703-305-5959. The examiner can normally be reached on Mon-Thur and alternate Fri from 7:00am to 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Rinehart can be reached on 703-305-4815. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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